GSM 12A

SMS-operated Alarm and Switch Control

Installation and User Manual

Informationen auf Deutsch / Informations en français:
www.EcoStarter.com

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www.maurelma.ch

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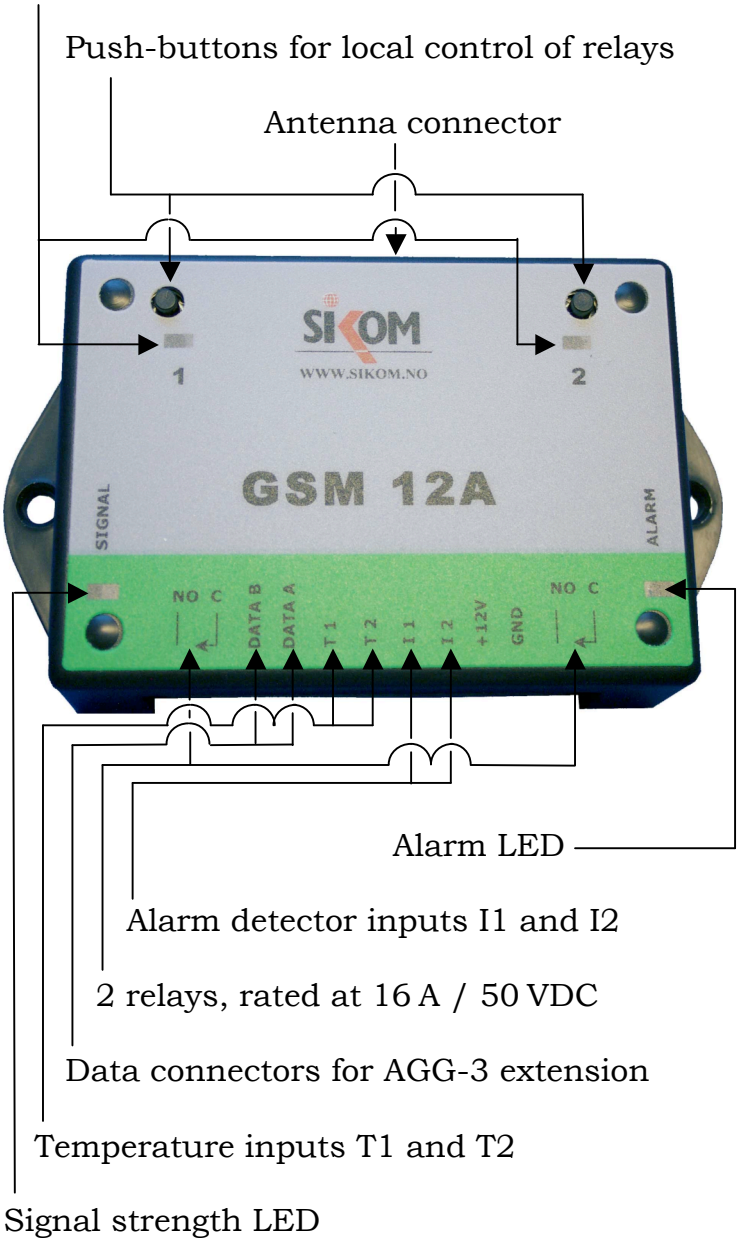
Overview of GSM 12A

LEDs for relay status (relay 1 and 2)
- Green light: relay on
- No light: relay off



Connections

Preparation of SIM card

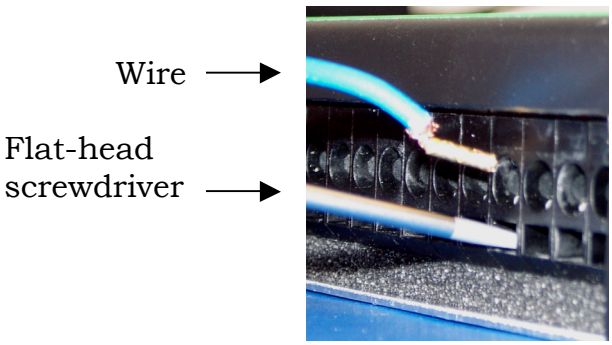
All remote communication with GSM 12A takes place through the GSM network. In order to receive SMS command messages, GSM 12A needs to have a SIM card installed, just like any standard mobile phone. SIM cards from any mobile phone operator will do (pre-pay or subscription based) as long as they enable SMS messaging.
NB: pre-pay solutions will often have a limited life span, and need to be recharged with credit at least once a year.
GSM 12A requires the SIM card PIN code to be deactivated. This is carried out by temporarily inserting the SIM card into a normal GSM mobile phone where the PIN code can be turned off (please refer to the manual of your mobile phone).

Inserting the SIM card

Always ensure that GSM 12A is turned off when manipulating the SIM card. Insert the card as shown below, with the notch in the top right corner.

General connection method

Use a flat-head screwdriver to lift the contact springs of the terminal block while inserting the wires into their terminal points.



Connections required before use

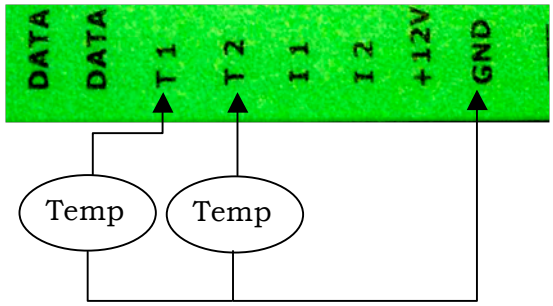
NB: do not connect the power supply before all connections are made!

Connection of antenna

Hang the antenna **vertically**, as high as possible, on a wood or plaster support.
For the actual connection, please refer to the overview, page 2.

Connection of temperature sensors

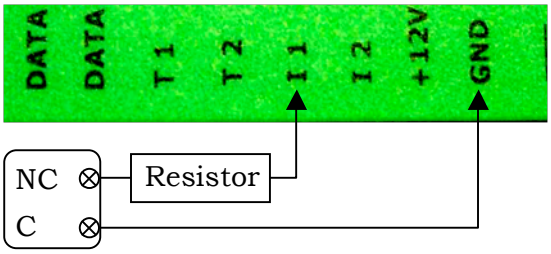
Connect the enclosed temperature sensor either on inputs T1 and GND, or on T2 and GND. Locate the sensor tip where temperature reading is wanted (but protect it from excessive humidity). You may purchase a second sensor for monitoring two locations.



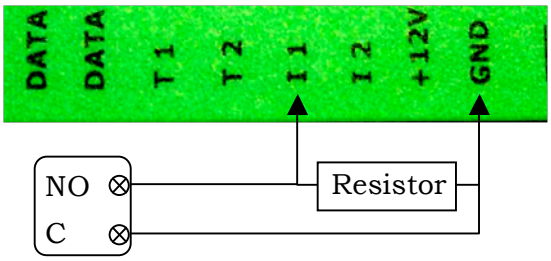
To preserve their precision, temperature sensors should be laid out so as to avoid electrical interference, e.g. from 230 V cables or floor heating.

Connection of alarm detectors

GSM 12A offers 2 inputs for gas, fire, intrusion, water or similar detectors. Connect such detectors either on inputs I1 and GND, or on I2 and GND. A resistor of 10 kΩ to 27 kΩ must be inserted as shown in the following two figures.



Normally closed detector loop: resistor mounted in series



Normally open detector loop: resistor mounted in parallel

Connection to relays

GSM 12A integrates 2 potential-free 16 A relays (max 50 V), which are controlled by sending SMS messages or by operating the switches on the faceplate of the device. Connect the load to the relays through terminals NO (for *normally open*) and C (for *common*).

Data connections

GSM 12A has two data connectors labelled DATA A and DATA B, to be used only with extension AGG-3, a power generator controller made by Sikom. The user manual of AGG-3 describes these connectors.

Power supply

Connect power supply wires to terminals +12V and GND. The 12 volts source must be able to deliver at least 1 ampere.

Start-up

After all required connections have been made and a SIM card inserted, follow the start-up procedure:

Powering on GSM 12A

Once GSM 12A has been connected to a 12 VDC power supply, it will be ready in 10 to 15 seconds. The Signal LED will light up according to the convention described below under the title *Signal strength*.

Should there be a problem with the SIM card (e.g. if it has been incorrectly inserted, if the SIM card is faulty, or its PIN code not deactivated), the Signal LED will start blinking green after a few seconds. In that case, first make sure that the SIM card PIN code really is deactivated, as described on page 3.
If Alarm LED keeps blinking red, a fault was discovered during the self-test of GSM 12A. This indication occurs about 20 seconds after powering on. Contact then your dealer.

Signal strength

The Signal LED indicates the signal strength as follows:

1. Steady green: good signal.
2. Off (no light): bad or no signal.

In case situation (2) occurs, try re-orienting the antenna to obtain a better coverage. Failing that, a better antenna may be purchased from Sikom.

Identification of optional keyboard

The wireless keyboard is an optional accessory that is only used for locally switching the alarm on/off. First, press both push-buttons of GSM 12A until the LEDs start blinking. Then keep the “S” and “A” keys of the wireless keyboard depressed until keyboard LEDs start flashing alternatively red and green, which signals that the keyboard has been successfully identified by GSM 12A. Then, use the keyboard as follows: press “A”, wait until the LED stops blinking, then type your personal access code. Possible results: green blinking = alarm deactivated, and red blinking = alarm activated.

SMS control

General procedure

GSM 12A is configured and controlled using regular SMS messages sent from mobile phones.
The factory-set “1234” personal access code will be used in the following examples. You should set a new access code as soon as possible – and remember it !

Sending SMS messages

SMS messages must always contain the following:

- First, the 4-digit access code.
- Then, any configuration/control commands (possibly several of them per SMS).

“” (quotation marks) are not part of the SMS.

Address SMS messages to GSM 12A by using the phone number of the SIM card inside it.

Overview of SMS commands

A = Alarm on or off
B = Activate / deactivate alarm inputs (I1 and I2)
D = Set alarm text
R = Switch relay on or off
S = Status message
T = Timer control
C = Change personal access code
L = Limits for temperature surveillance
J = Activate temperature surveillance for the limits set with command “L”
N = Mobile number to which GSM 12A will send surveillance and alarm messages.
V = Limits for power supply voltage surveillance (between 7 and 15 volts)
G = Activate voltage surveillance for the limits set with command “V”

The space character may be used between commands, but not inside a command: “`1234 R1 S1`” is valid, but “`1234 R 1 S 1`” will not be understood.

A Alarm on/off

A is followed by **1** for *on,* or **0** for *off*.

E.g.: "**1234 A1**" switches on alarm (surveillance of inputs I1 and I2)
E.g.: "**1234 A0**" switches off alarm (surveillance of inputs I1 and I2)

NB: Remember to activate inputs via command "B".

B Activate / deactivate alarm inputs

B is followed by detector input number, then **1** for *on* or **0** for *off*.

E.g.: "**1234 B11**" activates detector on input I1
E.g.: "**1234 B10**" deactivates detector on input I1
E.g.: "**1234 B21**" activates detector on input I2
E.g.: "**1234 B20**" deactivates detector on input I2

D Set alarm text

D is followed by detector input number and text message (max 20 characters). End with the "#" character.

E.g.: "**1234 D1Fire in dormitory#**"
E.g.: "**1234 D2Water leak#**"

R Relay on/off

R is followed by relay number, then **1** for *on* or **0** for *off*.

E.g.: "**1234 R11**" switches on relay 1
E.g.: "**1234 R10**" switches off relay 1
E.g.: "**1234 R21**" switches on relay 2
E.g.: "**1234 R20**" switches off relay 2

S Status message

There are two kinds of status messages. When GSM 12A receives command **S1** or **S2**, it will send the corresponding status message in reply to the mobile phone number the command was received from.

E.g.: "**1234 S1**" or "**1234 S2**"
E.g.: "**1234 S1 S2**" yields two SMS messages

Status message for command S1

S1 returns an overview of the most important configuration settings.

Sample status message received with S1:

```
Alarm:OFF Input 1:OFF 2:OFF
Relay 1:ON 2:OFF Temp1:X Temp2:+20
Volt:12.2V Num:(12345678) GSM12A V1.0E
```

Explanation:
Alarm:OFF (Alarm is not activated)
Input 1:OFF 2:OFF (Detector inputs I1 and I2 are deactivated)
Relay 1:ON 2:OFF (Relay 1 is on, relay 2 off)
Temp1:X (Temperature sensor T1 not connected)
Temp2:+20 (Current temperature at sensor T2)
Volt:12,2V (Voltage of power supply)
Num:(12345678) (Number to which surveillance and alarm messages are sent)
GSM12A V1.00 (Software version of GSM 12A)

Status message for command S2

S2 returns the details of surveillance-related configuration settings.

Sample status message received with S2:

```
T1:+20 Lim:OFF Lo:-10 Hi:+20
T2:X Lim:OFF Lo:-04 Hi:+15
Volt: 12,2V Lim:OFF Lo:7,0 Hi:15,0
Num:(12345678) GSM12A V1.0E
```

Explanation:
T1:+20 (Current temperature, sensor T1)
Lim:OFF (Temperature surveillance off for T1)
Lo:-10 Hi:+20 (Chosen lower and upper limits for temperature surveillance at T1)
T2:X (Temperature sensor T2 not connected)
Lim:OFF (Temperature surveillance off for T2)
Lo:-04 Hi:+15 (Chosen lower and upper limits for temperature surveillance at T2)
Volt:12,2V (Voltage of power supply)
Lim:OFF (Voltage surveillance is off)
Lo:7,0 Hi:15,0 (Chosen lower and upper limits for voltage surveillance)
Num:(12345678) (Number to which surveillance and alarm messages are sent)
GSM12A V1.00 (Software version of GSM 12A)

T Timer control

The built-in relays can be turned on for a programmable duration, between 1 and 99 hours.
T is followed by relay number, then the desired number of hours (always a 2-digit value: “01” = 1 hour, “05” = 5 hours, etc.)

E.g.: “**1234 T101**” switches relay 1 on for 1 hour
“**1234 T222**” switches relay 2 on for 22 hours

C Change personal access code

C is followed by a new 4-digit personal access code. The factory-set “1234” code should be replaced as soon as possible.

E.g.: “**1234 C9898**” changes code from 1234 to 9898

NB: remember the new code!

L Limits for temperature surveillance

GSM 12A is able to perform temperature surveillance and send an SMS message when a chosen lower or upper limit is exceeded.
The chosen limits must be in the range of -29ºC to +49ºC.
First, remember to set with command “N” the number to which these alarms shall be sent.

Use command “J” to activate or deactivate surveillance of chosen temperature limits. Once any of the limits is exceeded, GSM 12A will send off a message, and **deactivate** the surveillance. If you wish to continue the surveillance, re-activate it with command “J”.

L is followed by sensor number, then the lower and upper limits. Temperatures are 2-digit values preceded by “+” or “-”, as in “+05”, “+22”, “-09”, “-20”.

E.g.: “**1234 L1-10+20**” stores -10ºC and +20ºC as lower and upper limits for sensor T1
E.g.: “**1234 L2-08+05**” stores -8ºC and +5ºC as lower and upper limits for sensor T2

Should you want surveillance of only one limit, set the other limit low or high enough to ensure that it will never be exceeded.

J Activate temperature surveillance for the limits set with command "L"

J is followed by sensor number, then **1** for *on* or **0** for *off*.

E.g.: "**1234 J11**" activates surveillance on sensor T1
E.g.: "**1234 J20**" deactivates surveillance on T2

GSM 12A will send resulting SMS messages to the mobile phone number stored with command "N".

NB! Once any of the limits is exceeded, GSM 12A will send off an SMS message, and **deactivate** the surveillance. If you wish to continue the surveillance, re-activate it later (as in the first above example) when the temperature has come back to normal.

Commands "L" and "J" may be combined.

E.g.: "**1234 L1-10+20 J11**" stores -10°C and +20°C as lower, respectively upper limits for sensor T1, then activates surveillance on sensor T1.

N Phone number for surveillance and alarm messages

GSM 12A needs to know to which mobile phone number it is to send its surveillance and alarm messages. In contrast, normal status messages will be returned as replies directly to the phone, which sent the request (command "S").

E.g.: "**1234 N12345678#**" stores 12345678 as number for receiving surveillance and alarm SMS messages.

It is recommended to immediately verify the correctness of the number (command "S1").

E.g.: "**1234 N12345678# S1**" stores a new number and requests a status message for verification.

Do not forget the international dialling code if GSM 12A is to send messages to phones with a foreign SIM card (e.g. prefix +47 for Norway, +41 for Switzerland, etc.).

E.g.: "**1234 N+41123456789#**" stores a Swiss number

V Voltage surveillance limits

GSM 12A is able to monitor the tension of its power supply (usually a 12V battery), and send an SMS message when a chosen lower or upper voltage limit is exceeded. **The chosen limits must be in the range of 7V to 15V.**

NB! Remember to set with command "N" the number to which these alarms shall be sent.

Use command "G" to activate surveillance of chosen voltage limits. Once any of the limits is exceeded, GSM 12A will send off an SMS message, and **deactivate** the surveillance. If you wish to continue the surveillance, re-activate it with command "G".

V is followed by the lower, then the upper voltage limits (always written as 3-digit values: "095" = 9.5V, "138" = 13.8V, etc.).

E.g.: "**1234 V095138**" sets lower limit to 9.5V (095), and upper limit to 13.8V (138).
E.g.: "**1234 V075125**" sets lower limit to 7.5V (075), and upper limit to 12.5V (125).

G Activate voltage surveillance for limits set with command "V"

G is followed by **1** for *on*, or **0** for *off*.

E.g.: "**1234 G1**" activates voltage surveillance
E.g.: "**1234 G0**" deactivates voltage surveillance

GSM 12A will send resulting SMS messages to the mobile phone number stored with command "N".

NB! Once any of the limits is exceeded, GSM 12A will send off an SMS message, and **deactivate** the surveillance. If you wish to continue the surveillance, re-activate it later (as in the first above example) when the voltage has come back to normal.

Commands "V" and "G" may be combined.

E.g.: "**1234 V095138 G1**" sets lower limit to 9.5V (095), upper limit to 13.8V (138), and activates voltage surveillance (command "G**1**").

Troubleshooting

No light from any LED:
- Are the wires mounted correctly to terminals +12V and GND?
- Does the battery/power supply provide enough current?
- Is the GSM network coverage sufficient?
- Is the antenna connected?

Signal LED rapidly blinks green:
- Is the SIM card inserted?
- Is the SIM card PIN code deactivated?
- Is the SIM card subscription valid?

Alarm LED rapidly blinks red:
- Wait about 2-3 minutes for the unit to restart on its own.
- If it's still blinking: restart GSM 12A by shortly disconnecting it from its power supply.
- The red blinking can finally signal a fault with the unit: contact your dealer.

No contact by SMS:
- Is the GSM coverage good enough?
- Does the battery/power supply provide enough current?
- Is the antenna mounted correctly?
- Do you use the right personal access code?

GSM 12A does not send status messages:
- Is it equipped with a pre-pay SIM card? If so, is there any credit left on it?
- Has the card been blocked by the network operator?
- Check the syntax of your SMS command.
- Do you use the right personal access code?

Preconditions and advice

- In an SMS, **1** always means *ON* and **0** (zero) is always *OFF*.

- Uppercase and lowercase letters can be used equally in commands.
  E.g., "**S1**" is the same as "**s1**".

- The 4-digit personal access code always comes as the first 4 characters of a message.

- Space characters (blanks) may be used between commands, but not inside a command: "**1234 R1 S1**" is valid, but "**1234 R 1 S 1**" will not be understood.

- Temperatures can only be read if a sensor is connected to terminal T1 or T2. Temperatures can be measured in the range of -29ºC to +49ºC.
  Status messages will report an "X" as temperature for each non-connected sensor input.
  Command "L" (for setting limits) will remain void in absence of sensors.

- Several commands may be combined in a single message sent to GSM 12A.
  E.g.: "**1234 T130 N123456789# S1**" switches relay number 1 on for 30 hours, stores a new phone number for alarm/surveillance messages, and requests a status message.

- Measured temperatures depend on the location of the sensor. There may be a difference of 2-3 degrees, depending on whether the sensor is placed high or low in a room. The precision of the sensor is +/- 2 degrees.

- Always wait 1 minute or more between each SMS message sent to GSM 12A.

- For GSM 12A to work satisfactorily, a good coverage of the relevant GSM network is needed. In case of bad coverage, it is recommended to purchase an outdoor antenna.

  The reliability of SMS messaging depends on the network operator. An SMS will not be delivered in case of errors on the GSM network, or similar issues under the responsibility of the operator. When the GSM network is heavily loaded, it may take several minutes (or even hours) for an SMS message to be delivered. Sikom AS cannot do anything about these conditions. The dispatch date and time of the message are nevertheless visible at delivery.

  In conformance with legal regulations, network operators are free to cease certain GSM services. Sikom AS is not a provider of GSM services and can therefore not be held liable for any changes of such services. Notifications should nevertheless be published long before such events take place (2 years or so).

- If you opt for a prepay solution, remember that the credit must be recharged before use. Information on this procedure, as well as how to check the remaining credit comes with the SIM card. GSM 12A is unable to warn if the credit is exhausted, as no SMS message may then be sent out.

- When a heating appliance (stove, radiator) is connected for remote control, it is a precondition that its power is adapted to the room it is expected to heat (size, insulation, etc.).

Technical specifications

Model:	GSM 12A
Operating voltage:	7,5 – 15,0 volts
Max load per relay:	50V-16A
Power consumption:	
Standby:	40 mA
Typical when active:	250 mA
When relay active:	70 mA
Operating temperature:	-20 to +50 ºC
Dimensions (LxDxH):	111 x 28 x 62 mm
Weight:	130g

Designed for indoor use only.

This equipment complies with the European R&TTE directive. Further information may be obtained by contacting either the Swiss importer through www.EcoStarter.com or the manufacturer:

Sikom AS
Jernbanegata 16/18
P.O. Box 223
7601 Levanger
Norway

Internet address: www.sikom.no

Maurer
Elektromaschinen
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GUARANTEE

Sikom AS products come with a two years guarantee.

Sikom AS guarantees this product against any faults due to material flaws or manufacturing errors, which limit or render useless certain functions described for the product. The guarantee requires the customer to present the original bill, with date of purchase clearly readable.

What is covered by the guarantee?
During the guarantee period, Sikom AS reserves the right to repair the product or to replace defective parts with functionally equivalent parts. If, after several attempts, Sikom AS is unable to correct the problem, and the product does not work as described in the manual, Sikom may elect to refund the purchase price or to replace the product with a functionally equivalent one. All replaced parts and products become the property of Sikom AS.

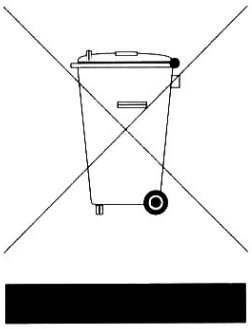
What is not covered by the guarantee?

- Damage to life, health, property and environment caused by circuits and appliances connected to the units (install and use the relays responsibly).
- Costs related to (re)installing, transporting and dismantling units; recycling may be governed by special rules (see the relevant chapter).
- Damages caused by use outside of the operating conditions specified in the manual.
- Malfunctions caused by transport damages.
- Service or modifications performed by other entities than Sikom AS.
- Use of non-original parts.
- External factors, such as lightning, power supply issues, mobile network issues, flood damage or fire.
- Units with modified, removed or unreadable serial number.

RECYCLING

Waste Electrical and Electronic Equipment (WEEE) information:

Waste Electrical and Electronic Equipment (WEEE) Symbol



The WEEE symbol indicates that this product must not be disposed of along with other household waste. It is the customer's responsibility to dispose of the product properly by taking it to a designated site for recycling. To locate a recycling/disposal site near you, contact your local city recycling program, your regular waste disposal service or the agent from whom you purchased this product.

SWICO Recycling-Garantie
Garantie de recyclage

For Switzerland, this product includes in its purchase price a contribution (the advanced recycling fee) to the SWICO Recycling Guarantee, which means that used equipment can be handed in free of charge for recycling. Collection sites are listed at www.swico.ch.